The Effect of Minimum Wage on Poverty

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Abstract

Minimum wage is a topic gaining lots of attention by policymakers in Washington. Additionally, the poverty rate in the U.S. is almost 15% with over 47 million Americans living in poverty. That said, would increasing the minimum wage help to decrease the poverty rate? In this paper, we addressed that topic, developing a regression model looking at minimum wage, education level, labor force participation rate, and the cost of living and their impact on the poverty rate. Our results indicate that there is no statistical significance between minimum wage and poverty rate and our other independent variables were all statistically stronger than minimum wage.

Introduction

Poverty continues to create detrimental effects in many households within the United States, and these effects are felt in many levels of American society. Last year, the official poverty rate in the U.S. was 14.8 percent, meaning over 46 million people were living in households below the federal poverty line. The 2015 U.S. federal poverty line for a household of three people is $20,090 and $24,250 for a household of four people. These facts are even more significant when taking into account that 2014 was the fourth consecutive year that the number of people in poverty was not significantly different from previous estimates. Even more devastating is the fact that over 21% of children last year were living in poverty. The Child Poverty Action Group asserts both that children from poorer backgrounds lag at all stages of education, and by the age of three, poorer children are estimated to be, on average, nine months behind children from wealthier backgrounds. Higher risk of both illness and premature death is also associated with poverty along with food insecurity. Children from low income families are more likely to die at birth or in infancy than children born into richer families. They are more likely to suffer chronic illness during childhood or have a disability. Poorer health over the course of a lifetime has an impact on life expectancy: professionals live, on average, 8 years longer than unskilled workers. In terms of food security, about 14% of households live without enough access to food for an active and healthy life. Approximately 8 million children lived in food-insecure households last year in which children, along with adults, were food insecure. Lack of quality education, health risks, and food insecurity are but a few of the many devastating consequences of poverty in the U.S., which continues to move in a non-decreasing pattern.

The issue of domestic poverty continues to challenge policymakers in Washington, D.C., creating a perpetual debate over the types of legislations and policies that can be the most effective means of substantially reducing poverty. One method, which has constantly been discussed for decades, is raising the federal minimum wage of $7.25. With the presidential elections taking place next year, the debate surrounding minimum wage continues to be talked about by candidates and political parties alike. Advocates of raising the minimum wage argue that higher wages allows workers to spend more money, which means more money will ripple into the economy and create a stimulus. The increased spending also means that business are getting more revenue and will have to hire more workers to keep up with increased demand for goods and services. While this may suggest that raising the minimum wage will reduce the poverty rate, many economic theories and justifications prove the opposite, in fact. First, many people living in poverty are unemployed, so increasing the minimum wage won't necessarily provide any direct benefits to them, and also people who work and live off the minimum wage aren't considered poor by federal guidelines. Second, raising the minimum wage increases the cost of production for firms,

reducing demand for the least skilled laborers in the market. This increase in unemployment is coupled by the fact that goods and services would become more expensive, reducing demand for them thereby increasing unemployment further as well as increasing the likelihood of more poverty in the country. Taking all this into consideration, we hypothesize that the minimum wage is not a good indicator of the poverty rate. Our statistical model we will test is below:

$$H_0: \beta_{minwage} = 0$$

Literature Review

The relationship between the poverty rate and the minimum wage is not an unexplored topic with multiple resources available. The consensus seems to confirm the hypothesis that the minimum wage is not a good indicator of the poverty rate. A report by the Congressional Budget Office noted that a 30-40% increase in the minimum wage only reduced the poverty rate by 2% but failed to account for the causes of increases in unemployment on the poverty rate in the future. In "Minimum Wages: A Poor Way to Reduce Poverty" (Sabia, 2014), Sabia accounts for the increases in unemployment and concludes that this would counter the supposed reduction in poverty. In the paper "Minimum Wages and Poverty" (Fields, Kanbur, 2005), the relationship between the minimum wage and the poverty rate is concluded to be circumstantial. Finally, Ben Gitis looks at the overall impact of minimum wage on the economy and points out that because relatively few workers earn minimum wage, an increase or decrease would not have a major impact on the economy.

"Minimum Wages: A Poor Way to Reduce Poverty"

This scholarly paper addresses exactly what its title suggests: why increasing the minimum wage is a poor way to reduce poverty. In the paper, Sabia (2014) notes that advocates for increasing the minimum wage do not account for the presence of competitive low-skilled labor markets in which corporations will respond to increasing costs (due to increased wages) by either cutting jobs or reducing work hours. Sabia also reports that an increase in the minimum wage during a period of higher unemployment reduces employment at a greater rate than if the minimum wage were increased during expansion: hence, raising the minimum wage should not be conducted during times of economic uncertainty. Sabia also argues that increasing the minimum wage does not effectively target those living under the poverty line. Sabia uses the wage increase from $7.25 to $10.10 proposed by President Obama in the 2014 State of the Union as an example. This increase would only affect 13% of all people living under the poverty line (Sabia, 2014). Sabia concludes his paper by stating that increases in "the minimum

wages fail to reduce net poverty because of its adverse effects on employment and poor ability to target workers living in households below the poverty threshold."

The paper did not discuss the effect increasing the minimum wage has on the overall prices in the market or inflation. No change in buying power occurs if wages rise equivalently with the average price of consumer products. The paper's conclusions are grounded in logic but not supported by clearly defined statistical analysis.

"Minimum Wages and Poverty"

A mathematically orientated paper by Gary S. Fields and Ravi Kanbur of Cornell University describes how changes in the minimum wage affect the amount of poverty. The contents of which show how the relationship between poverty and a change in minimum wages depends on four factors: the degree of poverty aversion, the elasticity of labor demand, the ratio of the minimum wage to the poverty line, and the extent of income-sharing. The results of their paper are dependent on these factors and thus poverty can either increase, decrease or remain the same when the minimum wage increases. They conclude that there is no concrete formula relating the two factors because there are too many parameters that determine poverty.

The paper does not utilize actual data but merely displays economic theory behind minimum wage and poverty. Our paper actually attempts to display the correlation between the minimum wage and poverty.

"The Effects of a Minimum-Wage Increase on Employment and Family Income"

An in-depth report on the effects of minimum wage increase was performed by the Congressional Budget Office for the United States. This paper agrees with the first report and describes how increasing the minimum wage is a poor way to tackle poverty. The CBO estimates that only 19 % of the $31 billion increase in real wages in a week would fall into the hands of low-income families which amounts to a reduction of people under the poverty line by 900 thousand. This is an improvement of roughly 2% for poverty while the increase in minimum wage was 30-40%. Additionally, if the minimum wage were increased to $9, the CBO estimates that that would only help 300 thousand of the 45 million people living under the poverty line.

Considering that the change in poverty is miniscule compared to the large change in minimum wage, it is very important to note that the increase in minimum wage could have adverse effects on unemployment. In theory, increases in the minimum wage above the equilibrium minimum wage in a competitive market causes unemployment which consequently could increase poverty. Our analysis will

include several more regression variables to the model and focus on the effects of minimum wage on the poverty rate directly.

"How Minimum Wage Increased Unemployment and Reduced Job Creation in 2013"

In the paper "How Minimum Wage Increased Unemployment and Reduced Job Creation in 2013," Ben Gitis, the Director of Labor Market Policy at the American Action Forum, provides substantial data that supports that an increase in the minimum wage increases the unemployment rate and reduces job creation. We can hypothesize that this increase in unemployment rate and reduction in job creation, would cancel out any reduction in poverty rate due to the increased wages. Gitis also notes that very few people relatively actually earn the minimum wage and argues that increase in the minimum wage thus has very little effect on the overall economy. Not only that, but many of the people earning the minimum wage are teenagers and not people supporting a family. Gitis found that an increase in the minimum wage only led to a massive increase in teenage unemployment and a sharp drop in teenage job creation.

Despite the great research done by Gitis relating minimum wage and unemployment rate, he did very little in regards to the relationship between minimum wage and poverty rate and we are making many of our own deductions. The most important takeaway from Gitis' work towards our research has to be the point he makes about a relatively small amount of people and high rate of teenagers earning minimum wage.

Data

The dependent variable in our model was the poverty rate of a state. The poverty rate is determined by dividing the number of people living in poverty by the total population. Whether or not a family is in poverty is determined by whether their income falls below a certain threshold, which is chosen based on the size of the family.

One of the independent variables used in this study was the minimum wage, which varies from state to state. There are 5 states that do not have any minimum wage and the federal minimum wage of $7.25 applies for them. There are 16 states that have a minimum wage equal to the federal minimum and there are 29 states that have a minimum wage greater than the federal minimum. Unless price inflation occurs immediately after a wage increase, consumers' purchasing power should increase with higher wages and thus a higher minimum wage could reduce the amount of people living under the poverty line. The second independent variable was a state's' unemployment benefits measured as the max weekly benefits. The amount of help people receive from the government in time of financial instability should be an indicator for the number of people living in poverty. Large sums of financial aid should transpose to

lower poverty rates. The third independent variable is a state's unemployment rate. People searching for a job are expected to deplete their savings faster than people not searching for jobs. Therefore, a higher unemployment rate could be a signal for more people living in poverty. The fourth independent variable is the labor force rate. This would indicate the percent of people that are unable to work and/or are discouraged workers with no reliable source of income. Instability in income should be an indicator in identifying the amount of people living in poverty. A lower labor force rate thus should predict a more people living in poverty. The fifth independent variable is the cost of living. A high cost of living would translate to less purchasing power which makes it more difficult to acquire necessities such as food. Therefore a higher relative cost of living could translate to more people living under the poverty line. The sixth independent variable is the percentage of people with a bachelor's degree over the age of 25. Since educated people are in high demand in the job market, a state with many educated people over the age of 25 is expected to have few people under the poverty line.

The data for the poverty rates in 2014 were collected from povertyusa.org, a website run by the Catholic Campaign for Human Development. The data for the minimum wage was taken from the National Conference of State Legislatures and reflects minimum wages as of July 1, 2015. The data for the cost of living was retrieved from the Missouri Economic Research and Information Center and corresponds to the year 2015. The unemployment benefits data was compiled from an organization called File Unemployment and is based a consensus from 2013. The labor participation rate data were collected from the Bureau of Labor Statistics and corresponds to data from 2015. The percent number of people over the age 25 with a bachelor's degree data for the year 2014 was retrieved from socialexplorer.com which is a critically aclaimed resource for gathering a variety of data about the United States.

Table 1. Summary of Statistics

	Observations	Mean	Standard Deviation	Max	Min
Poverty Rate	50	15.08	3.35	24.00	8.70
Minimum Wage	50	7.90	0.71	9.47	7.25
Unemployment Benefits	50	453	136.29	993	235
Unemployment Rate	50	4.92	1.05	7.3	2.8
Education	50	28.10	4.77	39.38	18.32
Living Cost	50	104.54	17.55	167.40	83.40
Labor Part.	50	63.20	4.14	69.80	53.00

Table 1 displays the summary of statistics corresponding to the variables at hand. 50 observations were made for each category: poverty rate (dependent variable), minimum wage, unemployment benefits, education, living cost, and labor participation rate which correspond to each state in the United States. There are several notable observations in Table 1. The first observation is the narrow range of values for the max and min of the minimum wage and with a standard deviation that suggests that there are no states with minimum wages that are much different from the rest. Another interesting observation is the low minimum and high maximum value for the percent number of people over the age 25 with a bachelor's degree compared to the low standard deviation for the data. This suggests that there is significant disparity in education between states. Similarly, there is large disparity between cost of living with the maximum value being greater than two standard deviations from the mean. There is also large disparity in the max and min values for the labor participation rate based on the standard deviation and the mean. In particular, there are states with a labor participation rate almost three standard deviations from the mean.

It is important to determine whether or not the Gauss Markov Assumptions [GMA] are valid because if they hold true then the ordinary least square estimators are unbiased. The first GMA holds true because all of the independent variables do not perfectly predict the poverty rate and thus the linear regression model by definition has an error u. The second GMA is valid because the sources in this paper are credible and are expected to publish data with a random sample. The third GMA is true because all of the parameters are unique.The fourth GMA holds because the expected value of the error u in the multiple linear regression model is zero for all of the independent variables. The fifth assumption about homoskedasticity is not valid between the labor force rate variable and the unemployment rate variable. The reason for this is that the unemployment rate is used to calculate the labor force rate. This means that it is probable that the data is slightly skewed because of an increase variance due to multicollinearity.

To summarize the data, the dependent variable is the poverty rate and the independent variables are the minimum wage, unemployment benefits, unemployment rate, education, cost of living and the labor participation rate. It is important to highlight that there is potential multicollinearity between the unemployment rate and the labor participation rate.

Results

Table 2. Estimation Results

Dependant Variable (poverty rate)				
Ind. Variables	**Model (1)**	**Model (2)**	**Model (3)**	**Model (4)**
Minimum Wage	-1.44** (-2.21)	0.556 (1.15)	0.609 (1.39)	
Dummy Minimum Wage				0.438 (0.78)
Education Level		-0.131* (-1.69)	-0.131* (-1.76)	-0.109 (-1.49)
Labor Participation Rate		-.515*** (-5.44)	-0.534*** (-7.74)	-0.533*** (-7.58)
Cost of Living		-0.068*** (-3.62)	-0.068*** (-3.73)	-0.063*** (-3.44)
Unemployment Rate		0.101 (0.29)		
Unemployment Benefits		.000 (0.14)		
Intercept	26.46*** (5.12)	53.44*** (8.04)	54.81*** (11.90)	58.20*** (14.57)
No. of observations	50	50	50	50
R-squared	.0924	.7836	.7831	.7768
Adjusted R-squared	.0735	.7534	.7638	.7570

(*Significant at 10%, **5%, ***1%)

Table 2 above breaks down important results for each of the four models. All the values found in the table were taken from the STATA outputs for the four models, which can all be found in the Appendix. The number not in the parentheses represents the coefficient for each independent variable and the number in the parentheses represents the corresponding t-value. One star represents significance at the 10% level, two stars represents significance at the 5% level and three stars represents significance at the

1% level. The table also lists R-squared and adjusted R-squared. R-squared is the most traditional way to compare how well a set of variables fits to a regression model, however adjusted R-squared is often seen as a better indicator. Since R-squared often increases when more variables are added to the model, the model with the most variables is often the one with the highest R-squared value, even if it does not have the best fit to the model. Adjusted R-squared accounts for this and doesn't show bias towards the model with the most variables.

Model 1

Model 1, which is a simple linear regression, observes the relationship between minimum wage and poverty rate. Model 1 is written below and the results of this regression can be seen in Table 2:

$$povrate = \beta_0 + \beta_1 minwage$$

This model suggests a negative relationship between poverty rate and minimum wage. It makes sense that the relationship between minimum wage and poverty rate is negative because we would expect that an increase in the minimum wage would possibly lead to less poverty in the short run. However, we predicted that the effect would be essentially negligible and a slope of -1.4396 is in line with our original hypothesis. For every dollar that minimum wage is increased by, we would only see a decrease in the poverty rate of 1.44%. There is a t-value of 2.44 associated with this coefficient and using this value, we are able to say we are 95% confident that minimum wage is statistically significant in its relationship with poverty rate. Although this simple linear regression is a good way to look at a basic relationship between the minimum wage and poverty rate, there are many other factors at play that impact poverty rate. Using a simple linear regression model doesn't account for other variables and we may be experiencing omitted variable bias because of this. If omitted variable bias is in fact occurring, our model could be overestimating the coefficient associated with minimum wage. Because of this, we need to look at a model that includes more variables.

Model 2

After this step, we decided to create and observe the results of a multilinear regression model (Model 2). In this model, we included additional explanatory variables beyond minimum wage to see if there was any significant relationship between any individual or set of variables and the poverty rate. The unemployment rate, level of education, cost of living, participation in the labor force, and unemployment benefits were the variables included in the regression. Model 2 itself is written below:

$$povrate = \beta_0 + \beta_1 minwage + \beta_2 unrate + \beta_3 educ + \beta_4 livcost + \beta_5 labpart + \beta_6 unbenef$$

Based on these results, we can yield the actual equation to the multilinear regression, which can be seen in Table 2. Unlike the previous model, this model actually shows a positive relationship between minimum wage and poverty rate where for every dollar increased in the minimum wage, the poverty rate increases by a factor of 0.556. However, the t-value associated with this coefficient is only 1.15, which means this relationship is not statistically significant at a 1% level, 5% level, or 90% level. This assumption not only supports our hypothesis that there is no significant relationship between minimum wage and poverty, but goes beyond and suggests that an increase in the minimum wage leads to an increase in the poverty rate. There are several economic theoretical justifications that support this conclusion as well. Education level, cost of living, and labor force participation were all negatively related to the poverty rate. Based on a t-test at a 95% confidence level, the t-values of all three of these variables are all greater than the $t_{.05}$ value of ~1.684, indicating their statistical significance. One issue with this model is that unemployment rate and unemployment benefits both had almost no significance, despite being two factors we thought would have a major impact on poverty rate. Although individually insignificant, there is a chance these variables could be jointly significant. In order to test this theory, we needed to conduct an F test using a restricted model.

Model 3

After noting this, we then created another multilinear model (Model 3) that excluded the unemployment rate and unemployment benefits, both of which were insignificant to the model individually. In Model 3, we already know that each of the variables were each statistically significant at an individual level. However, recall that in Model 2, unemployment rate and unemployment benefits were individually insignificant. To see if both variables are possibly jointly significant, we needed to create a new restricted model that excluded these variables. Model 3 can be seen below and the results are located in Table 2.

$$povrate = \beta_0 + \beta_1\, minwage + \beta_2\, educ + \beta_3\, livcost + \beta_4\, labpart$$

Once we had the restricted model, we were able to use it along with the unrestricted model, model 2, and run an F test searching for joint significance. Recall that an F test is calculated by dividing the explained variance of the data by the unexplained variance. This can also be written as it is below.

$$F = \frac{(SSR_r - SSR_{ur})/q}{SSR_{ur}/(n-k-1)}$$

SSR represents the sum of squared residuals, which we obtained from the STATA output, found in the Appendix. q is the numerator degrees of freedom, which is the degrees of freedom of the restricted model minus the degrees of freedom of the unrestricted model. Essentially, q represents how many less

parameters exist in the restricted model than the unrestricted. n - k- 1 is the denominator degrees of freedom, which is the degrees of freedom of the unrestricted model. We can use the equation for an F test to test the null hypothesis of,

$$H_0: \beta_{unrate} = 0, \beta_{unbenefits} = 0$$

Using the values from models 2 and 3, we were able to calculate our F statistic below.

$$0.047 = \frac{(119.19 - 118.93)/2}{118.93/43}$$

The F value of 0.047 is essentially equal to zero and falls significantly below the critical F value, indicating that the unemployment rate and unemployment benefits are neither individually significant nor jointly significant. We fail to reject the null hypothesis and thus, we can exclude these variables from the final model.

Therefore, with the exclusion of unemployment rate and unemployment benefits, we can conclude that model 3 is our best and final model. Out of all our models, model 3 has the highest adjusted R-squared value and all additional explanatory variables are significant. After determining that Model 3 would serve as the best model, we wanted to study the effects of states implementing their own minimum wage, which led us to create Model 4.

Model 4

To obtain further qualitative information about the relationship between minimum wage and poverty rate, we made another multilinear regression model and created a dummy variable to categorize two distinct groups of states. Although our data showed no linear model between minimum wage and poverty rate, it is possible that states that added their own minimum wage saw a poverty rate significantly different from states that did not implement their own minimum wage. We assigned a value of 1 to states that implemented its own minimum wage that differed from the federal minimum wage and 0 to states that did not. The formula and the results of this model can be seen In Table 2 and below:

$$povrate = \beta_0 + \delta_0 dminwage - \beta_1 educ - \beta_2 livcost - \beta_3 labpart$$

Like the previous models, minimum wage is still statistically insignificant, meaning states that added a minimum wage saw no difference in poverty rate than states who kept implemented a minimum wage no higher than the federal minimum. Additionally, we can see that all the other variables remained strongly significant, implying that the addition of a state-mandated minimum wage had no impact on the influence of these factors.

Conclusion

With the presidential elections taking place next year in 2016, much of the debate around Washington has been focused on minimum wage, with many policymakers facing pressure to increase the minimum wage. However, would increasing the minimum wage actually help to decrease poverty? Our original hypothesis stated that there would be no change in the poverty rate due to an increase in minimum wage and our research confirmed this theory. Furthermore, our research seems to be aligned with the findings made by Sabia, Fields & Kanbur and the Congressional Budget Office whose results are outlined in the literature review.

Our regression model looked at the impact of minimum wage, education level, cost of living, and labor force participation rate on the poverty rate and found all variables except for minimum wage were significant. Revisiting our null hypothesis below,

$$H_0: \beta_{minwage} = 0$$

we found $\beta_{minwage}$ was statistically insignificant and we fail to reject the null hypothesis. Not only did our regression models show no statistical significance between the minimum wage and poverty rate, it actually showed that minimum wage had a positive correlation with poverty rate, meaning if there was to be any relationship between the two, it would be of the positive nature. We can look at this result closer by looking at the macro-economic model, where an increase in minimum wage leads to an increase in unemployment rate. This increase in unemployment rate could be attributed with countering the increase in wealth that comes from an increased minimum wage, helping to explain the lack of impact minimum wage has on poverty. Volatility in the job market as a result of a high turnover rate is also a major contributor to high unemployment rates. While this may seem like an indicator of what the average domestic household endures, frictional unemployment is non-detrimental provided this kind of unemployment lasts for only a brief period of time. However, if the model were to take structural unemployment as a parameter, it may be able to account for a higher poverty rate.

For further research on this subject matter it might be beneficial to study the multicollinearity of unemployment benefits and the cost of living. The reason being that a higher cost of living merely requires greater government assistance. On similar note, there is most likely multicollinearity between education and structural unemployment should structural unemployment be used in the future model. These multi-collinearities could increase the variance in the model by significant amounts and should be analyzed.

With over 46 million Americans living in poverty, the issue is definitely one that needs to be addressed by the government. However, an increase in the minimum wage is not the right solution and

would only lead to increased unemployment and no change in the poverty rate. If the issue is to be addressed, it needs to be addressed in other ways.

References

2015 Poverty Guidelines. (2015, September 29). Retrieved November 20, 2015, from http://aspe.hhs.gov/2015-poverty-guidelines

Causes and Effects of Poverty on Society, Children, and Violence. (2011, March 1). Retrieved November 20, 2015, from http://www.poverties.org/effects-of-poverty.html

Congressional Budget Office. (2014). The Effects of Minimum-Wage Increase on Employment and Family Income. CBO Publication, na. Retrieved November 20, 2015 from http://www.cbo.gov/sites/default/files/cbofiles/attachments/44995-MinimumWage.pdf

Cost of Living Data Series Third Quarter 2015. (n.d.). Retrieved November 20, 2015, from https://www.missourieconomy.org/indicators/cost_of_living/

Employment Policies Institute | Can Raising the Minimum Wage Reduce Poverty and Hardship? (n.d.). Retrieved November 20, 2015, from https://www.epionline.org/studies/can-raising-the-minimum-wage-reduce-poverty-and-hardship/

Fields, G. & Kanbur, R. (2005). Cornell University. Minimum Wages and Poverty. Conference on "Seventy-Five Years of Development Research," na. Retrieved November 20, 2015 from http://www.arts.cornell.edu/poverty/kanbur/fieldskanburminwage.pdf

Gitis, Ben. (2014, March). How Minimum Wage Increased Unemployment and Reduced Job Creation in 2013. Retrieved November 20, 2015, from http://americanactionforum.org/research/how-minimum-wage-increased-unemployment-and-reduced-job-creation-in-2013

Halvorson, C. (2014, March 6). The Pros and Cons of Raising the Minimum Wage. Retrieved November 20, 2015, from http://wheniwork.com/blog/the-pros-and-cons-of-raising-the-minimum-wage/

Hunger and Poverty Fact Sheet. (n.d.). Retrieved November 20, 2015, from http://www.feedingamerica.org/hunger-in-america/impact-of-hunger/hunger-and-poverty/hunger-and-poverty-fact-sheet.html?referrer=https://www.google.com/

Poverty Map. (n.d.). Retrieved November 20, 2015, from http://www.povertyusa.org/the-state-of-poverty/poverty-map-state/

Pritzker, P. (2015, September 1). Income and Poverty in the United States 2014. Retrieved November 20, 2015, from http://www.census.gov/content/dam/Census/library/publications/2015/demo/p60-252.pdf

Sabia, J. (2014). University of San Diego. Minimum Wages: A Poor Way to Reduce Poverty. Tax & Budget Bulletin, 70. Retrieved November 20, 2015 from http://object.cato.org/sites/cato.org/files/pubs/pdf/tbb_70.pdf

States and selected areas: Employment status of the civilian noninstitutional population, January 1976 to date, seasonally adjusted. (n.d.). Retrieved November 20, 2015, from http://www.bls.gov/lau/ststdsadata.txt

State Minimum Wages | 2015 Minimum Wage by State. (2015, November 10). Retrieved November 20, 2015, from http://www.ncsl.org/research/labor-and-employment/state-minimum-wage-chart.aspx

Unemployment Benefits Comparison by State. (n.d.). Retrieved November 20, 2015, from http://fileunemployment.org/unemployment-benefits-comparison-by-state

USDA ERS - Food Security in the U.S.: Key Statistics & Graphics. (n.d.). Retrieved November 20, 2015, from http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx

Appendix

Model 1 Stata Output

$$povrate = \beta_0 + \beta_1 minwage + u$$

Source	SS	df	MS	Number of obs	=	50
				F(1, 48)	=	4.89
Model	50.8060744	1	50.8060744	Prob > F	=	0.0318
Residual	498.747726	48	10.3905776	R-squared	=	0.0924
				Adj R-squared	=	0.0735
Total	549.5538	49	11.2153837	Root MSE	=	3.2234

povrate	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
minwage	-1.439643	.6510536	-2.21	0.032	-2.748674	-.1306117
_cons	26.46036	5.16582	5.12	0.000	16.07378	36.84694

Model 2 Stata Output

$$povrate = \beta_0 + \beta_1 minwage + \beta_2 unrate + \beta_3 educ + \beta_4 livcost + \beta_5 labpart + \beta_6 unbenef + u$$

Source	SS	df	MS	Number of obs	=	50
				F(6, 43)	=	25.95
Model	430.626891	6	71.7711485	Prob > F	=	0.0000
Residual	118.926909	43	2.76574207	R-squared	=	0.7836
				Adj R-squared	=	0.7534
Total	549.5538	49	11.2153837	Root MSE	=	1.6631

povrate	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
minwage	.5558993	.4825232	1.15	0.256	-.4172016	1.529
unrate	.1006878	.3520618	0.29	0.776	-.6093124	.810688
educ	-.1305861	.0773134	-1.69	0.098	-.2865034	.0253312
livcost	-.0681314	.0188273	-3.62	0.001	-.1061002	-.0301625
labpart	-.5152913	.0946777	-5.44	0.000	-.7062271	-.3243555
unbenef	.0002491	.0018451	0.14	0.893	-.0034718	.0039701
_cons	53.44039	6.64856	8.04	0.000	40.03229	66.84849

Model 3 Stata Output

$$povrate = \beta_0 + \beta_1 minwage + \beta_2 educ + \beta_3 livcost + \beta_4 labpart + u$$

Source	SS	df	MS	Number of obs	=	50
				F(4, 45)	=	40.62
Model	430.360273	4	107.590068	Prob > F	=	0.0000
Residual	119.193527	45	2.64874504	R-squared	=	0.7831
				Adj R-squared	=	0.7638
Total	549.5538	49	11.2153837	Root MSE	=	1.6275

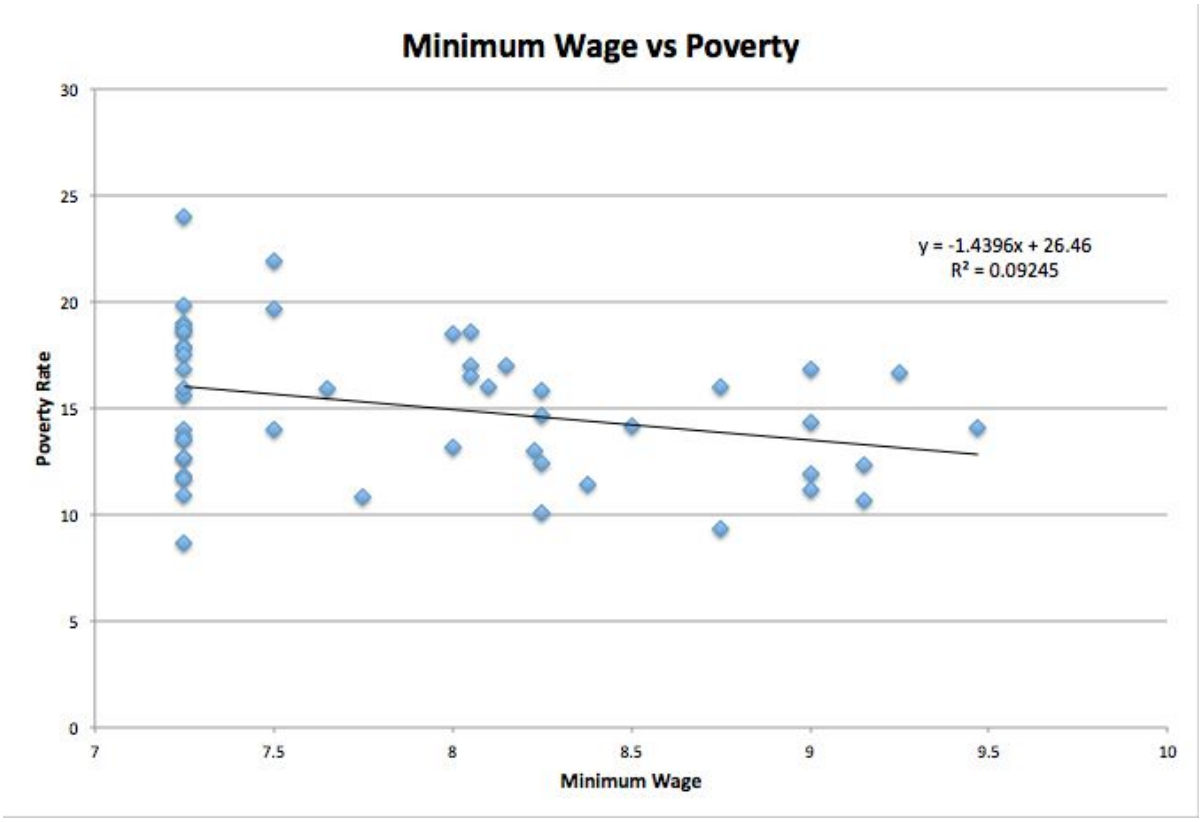
povrate	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
minwage	.6093599	.4383648	1.39	0.171	-.2735522	1.492272
educ	-.1313739	.074575	-1.76	0.085	-.2815757	.0188279
livcost	-.068236	.0183179	-3.73	0.001	-.1051301	-.031342
labpart	-.533506	.0688889	-7.74	0.000	-.6722555	-.3947566
_cons	54.81082	4.607599	11.90	0.000	45.53064	64.091

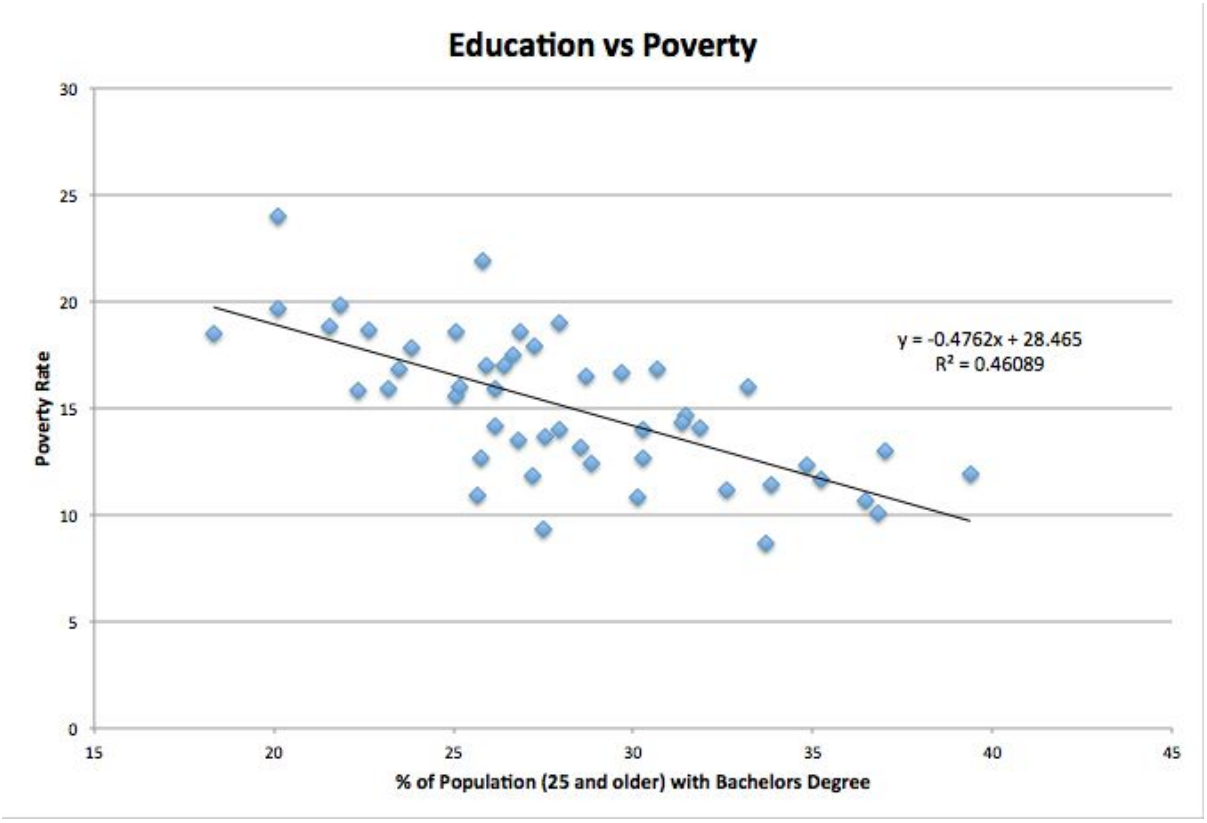
Model 4 Stata Output

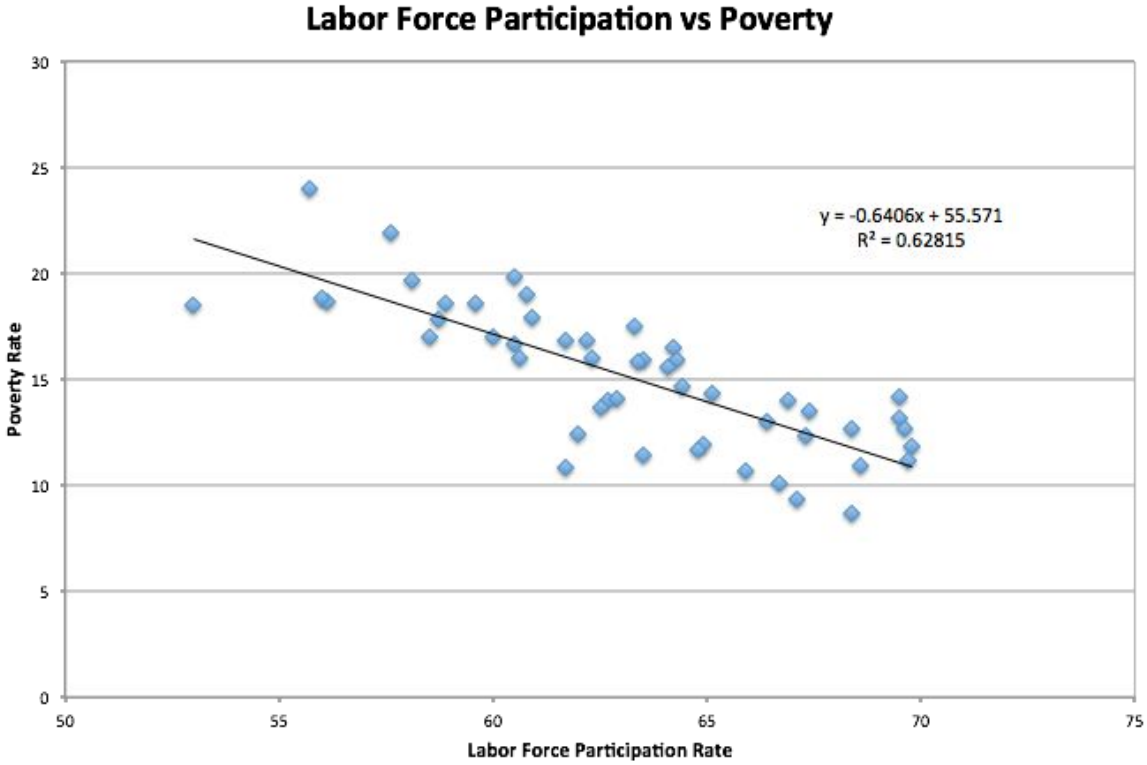
$$povrate = \beta_0 + \beta_1 dminwage + \beta_2 educ + \beta_3 livcost + \beta_4 labpart + u$$

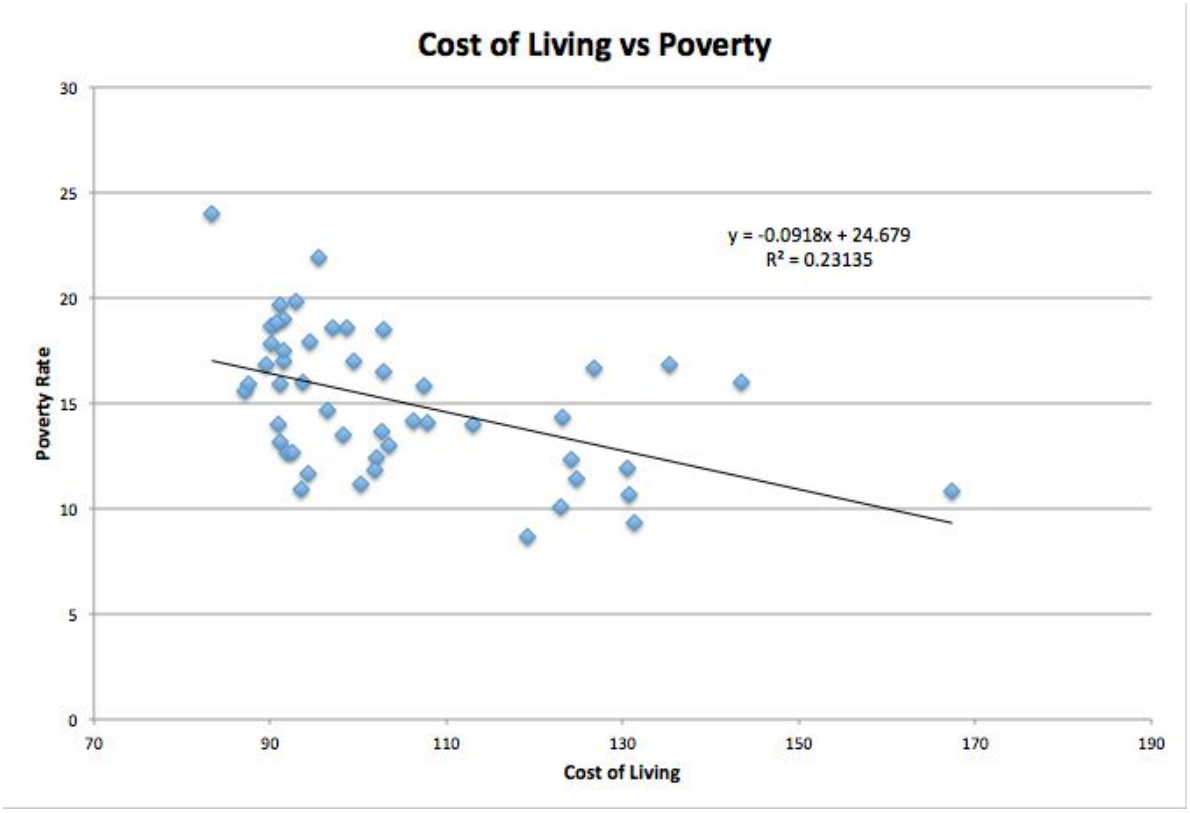
Source	SS	df	MS	Number of obs	=	50
				F(4, 45)	=	39.16
Model	426.906077	4	106.726519	Prob > F	=	0.0000
Residual	122.647723	45	2.72550496	R-squared	=	0.7768
				Adj R-squared	=	0.7570
Total	549.5538	49	11.2153837	Root MSE	=	1.6509

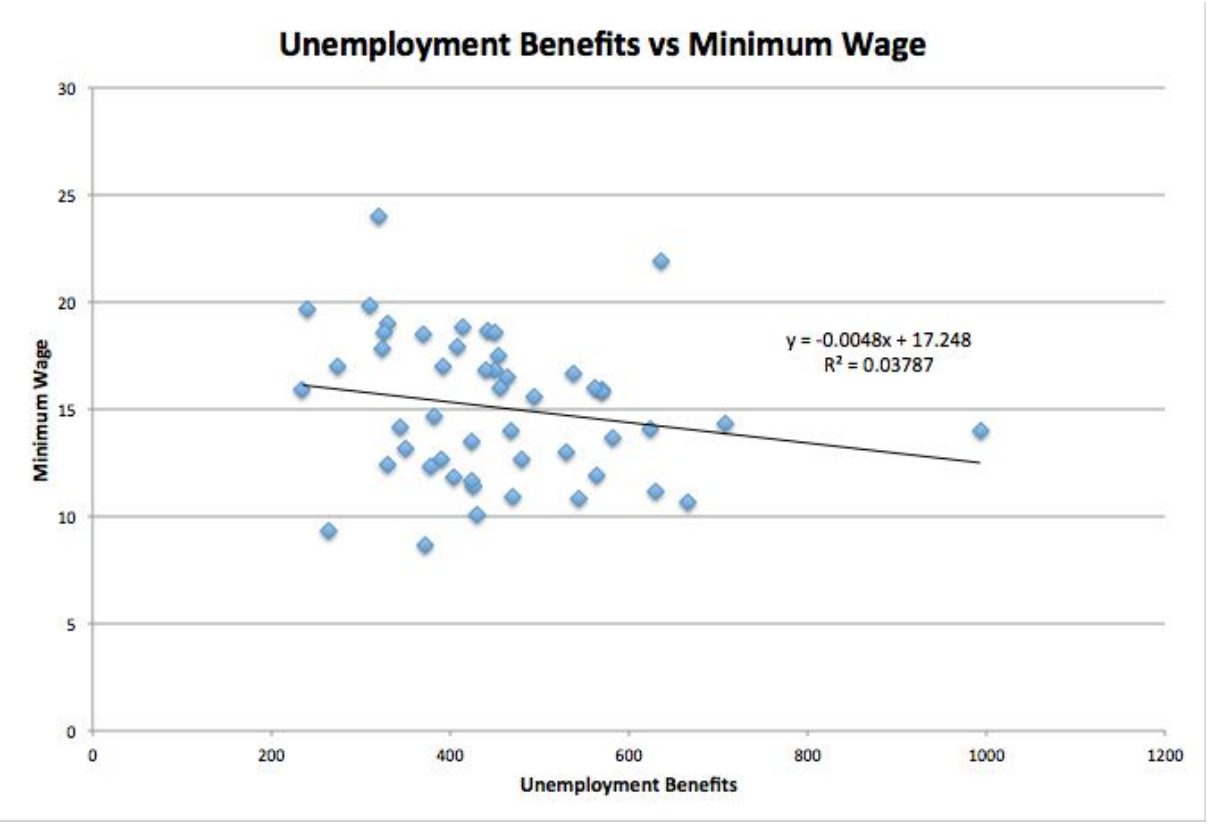
povrate	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dminwage	.4382108	.5608292	0.78	0.439	-.6913572	1.567779
educ	-.1093027	.0731553	-1.49	0.142	-.256645	.0380395
livcost	-.0629336	.0182688	-3.44	0.001	-.0997288	-.0261385
labpart	-.5334795	.0703406	-7.58	0.000	-.6751527	-.3918064
_cons	58.19658	3.993274	14.57	0.000	50.15371	66.23945

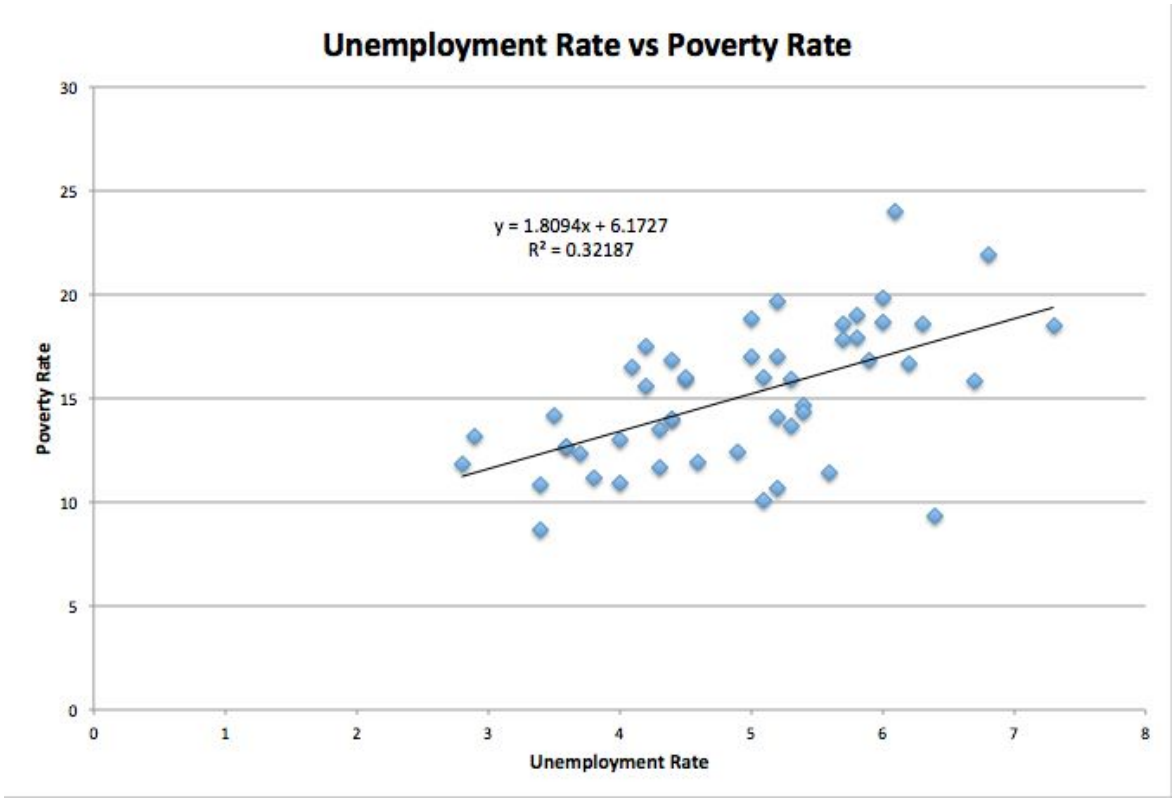

Minimum Wage vs Poverty
y = -1.4396x + 26.46
R² = 0.09245
Poverty Rate
Minimum Wage
30
25
20
15
10
5
0
7
7.5
8
8.5
9
9.5
10


Education vs Poverty
y = -0.4762x + 28.465
R² = 0.46089
Poverty Rate
% of Population (25 and older) with Bachelors Degree
30
25
20
15
10
5
0
15
20
25
30
35
40
45


Labor Force Participation vs Poverty
y = -0.6406x + 55.571
R² = 0.62815
Poverty Rate
Labor Force Participation Rate
30
25
20
15
10
5
0
50
55
60
65
70
75


Cost of Living vs Poverty
y = -0.0918x + 24.679
R² = 0.23135
Poverty Rate
Cost of Living
30
25
20
15
10
5
0
70
90
110
130
150
170
190


Unemployment Benefits vs Minimum Wage
Minimum Wage
Unemployment Benefits
y = -0.0048x + 17.248
R² = 0.03787
0
5
10
15
20
25
30
0
200
400
600
800
1000
1200


Unemployment Rate vs Poverty Rate
Poverty Rate
Unemployment Rate
y = 1.8094x + 6.1727
R² = 0.32187
0
5
10
15
20
25
30
0
1
2
3
4
5
6
7
8